

Rapid Manufacturing of High Power Electric Propulsion Components, Phase I

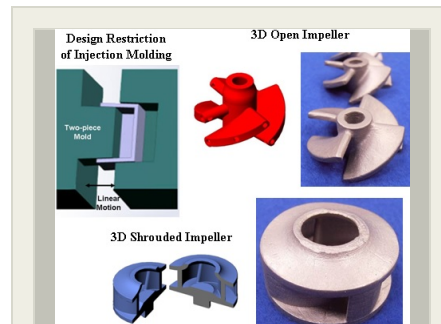
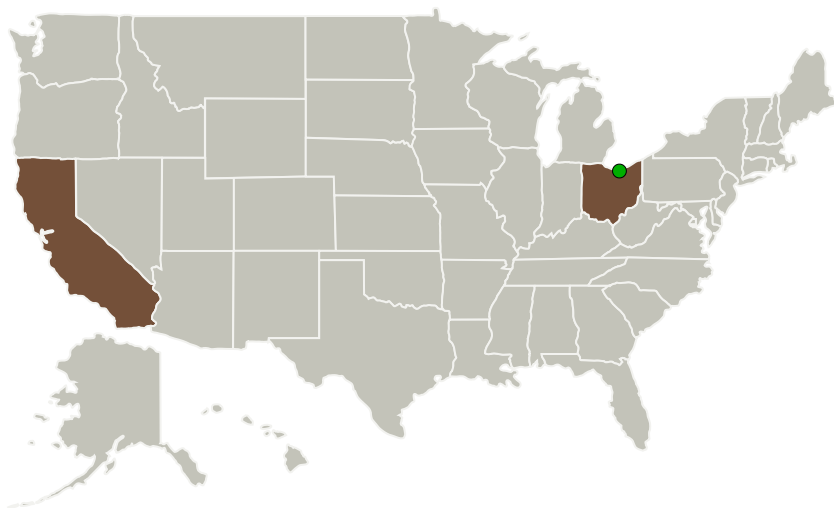
Completed Technology Project (2015 - 2015)



Project Introduction

A flexible, lower cost approach to the rapid manufacture of high power electric propulsion components is desirable. Today's near-net fabrication technologies are extremely limited in terms of design flexibility due to reduction-based fabrication approaches. While modern additive manufacturing approaches show great promise, these still require significant development for use with higher temperature materials such as refractory metals. Considering this need for design flexibility as well as shorter development cycles, reduced costs, and minimized variance in making high power electric propulsion components, an innovative technology for rapid manufacturing that can be used with high temperature materials will be demonstrated in this work. Specifically, an additive manufacturing/metal injection molding manufacturing technology will be developed to produce a prototype article for a high power electric propulsion component made from a refractory alloy.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

California	Ohio
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Project Transitions

**July 2015:** Project Start**December 2015:** Closed out

Closeout Summary: Rapid Manufacturing of High Power Electric Propulsion Components, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image(<https://techport.nasa.gov/file/139384>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Transition45 Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

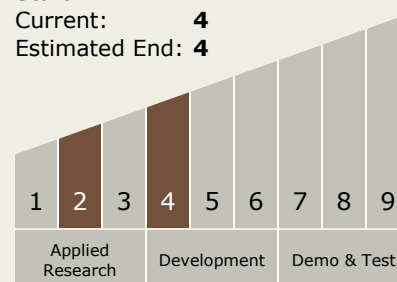
Edward Chen

Technology Maturity (TRL)

Start: 2

Current: 4

Estimated End: 4

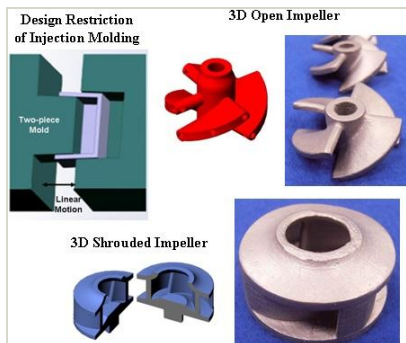


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Images



Briefing Chart Image

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(<https://techport.nasa.gov/image/131674>)

Technology Areas

Primary:

- TX01 Propulsion Systems
 - └ TX01.2 Electric Space Propulsion
 - └ TX01.2.2 Electrostatic

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System